

Amendments to the Claims:

03/25/2009

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Cancelled) A method of recovering metal from waste plating stream and using the recovered metal comprising:

providing a waste metal plating stream containing metal ions in an aqueous solution;

passing the waste metal plating stream containing the metal ions into an electrochemical cell assembly having an inlet for the waste metal plating stream, a plurality of alternating anodes and metallic cathodes porous to the waste metal solution and an exit from the cell;

passing the waste metal plating stream through pores of the metallic cathode;

passing an electrical current through the anodes and metallic cathodes, thereby depositing a portion of the metal ions onto the cathodes and reducing the amount of the metal ion in the solution from that in the introduced waste metal plating stream; and

using the recovered deposited metal on the metallic cathode and the metallic cathode as a source of metal to be deposited on to a substrate in a subsequent metal plating process.

2. (Currently Amended) The process of claim 4 12 wherein the waste metal plating solution is comprised of the metal ions cadmium, cobalt, copper, lead, nickel, zinc, chromium or precious metal ions or mixtures thereof.

3. (Currently Amended) The process of claim 4 12 wherein the waste metal plating solution is comprised of nickel metal ions.
4. (Currently Amended) The process of claim 4 12 wherein the waste metal plating solution is comprised of copper metal ions.
5. (Currently Amended) The process of claim 4 12 wherein the porous cathodes are comprised of sintered nickel having a porosity of 5 to 100 pores/inch (PPI).
6. (Currently Amended) The process of claim 4 12 wherein the waste plating solution has a metal ion content of at least 200 g/liter.
7. (Currently Amended) The process of claim 4 12 wherein the waste solution is subjected to metal deposition wherein the solution exiting the cell assembly has a metal ion content as low as 50 g/liter.
8. (Currently Amended) The process of claim 4 12 wherein the deposited metal on the cathodes is fractured into pieces and is used a source of metal ions in an electrochemical deposition of the metal.
9. (Currently Amended) The process of claim 4 12 wherein the waste metal plating solution is obtained from an aqueous rinse bath formed as a result of water washing a plated metal part after the deposition of the metal plate onto a substrate.

10. (Original) The process of claim 9 wherein the aqueous solution exiting the electrochemical cell assembly, for removal of metal ions from the waste solution, is recycled back to the aqueous rinse bath.

11. (Cancelled) A method of recovering metal from waste plating stream and using the recovered metal comprising:

providing a waste metal plating stream containing metal ions in an aqueous solution;

passing the waste metal plating stream containing the metal ions into an electrochemical cell assembly having an inlet for the waste metal plating stream, a plurality of alternating anodes and metallic cathodes porous to the waste metal solution and an exit from the cell;

passing the waste metal plating stream through pores of the metallic cathode;

passing an electrical current through the anodes and metallic cathodes, thereby depositing a portion of the metal ions onto the cathodes and reducing the amount of the metal ion in the solution from that in the introduced waste metal plating stream; and

using the recovered deposited metal on the metallic cathode and the metallic cathode as a source of metal to be deposited on to a substrate in a subsequent metal plating process;

wherein the waste metal plating solution is comprised of nickel metal ions; and

wherein the porous cathodes are comprised of sintered nickel having a porosity of 5 to 100 pores/inch (PPI); and

wherein the deposited metal on the cathodes is fractured into pieces and is used a source of metal ions in an electrochemical deposition of the metal.

12. (Previously Presented) A method of recovering metal from waste plating stream and using the recovered metal comprising

providing a waste metal plating stream containing metal ions in an aqueous solution;

passing the waste metal plating stream containing the metal ions into an electrochemical cell assembly having an inlet for the waste metal plating stream, a plurality of alternating anodes and metallic cathodes porous to the waste metal solution and an exit from the cell;

passing the waste metal plating stream through pores of the metallic cathode;

passing an electrical current through the anodes and metallic cathodes, thereby depositing a portion of the metal ions onto the cathodes and reducing the amount of the metal ion in the solution from that in the introduced waste metal plating stream; and

using the recovered deposited metal on the metallic cathode and the metallic cathode as a source of metal to be deposited on to a substrate in a subsequent metal plating process;

wherein a permeable ceramic diaphragm is used to separate the anodes and cathodes;

wherein the waste metal plating solution is comprised of nickel metal ions; and

wherein the waste metal plating solution is obtained from an aqueous rinse bath formed as a result of water washing a plated metal part after the deposition of the metal plate onto a substrate; and

wherein the aqueous solution exiting the electrochemical cell assembly, for removal of metal ions from the waste solution, is recycled back to the aqueous rinse bath.

13. (Currently amended) A method comprising:

providing a waste metal plating stream containing metal ions in an aqueous solution;

passing said waste metal plating stream containing said metal ions into an electrochemical cell assembly having an inlet for said waste metal plating stream, a plurality of alternating anodes and metallic cathodes porous to said waste metal solution, and an exit from the cell;

passing said waste metal plating stream through pores of at least one of said plurality of metallic cathodes;

passing an electrical current through said plurality of alternating anodes and metallic cathodes, thereby depositing a portion of said metal ions onto at least one of the plurality of metallic cathodes and reducing the amount of said metal ions in said aqueous solution;

removing said at least one of said plurality of metallic cathodes from said electrochemical cell assembly;

recovering said portion of said metal ions from said at least one of said plurality of metallic cathodes by fracturing said deposited portion into pieces to provide fractured

recovered portions and removing said fractured recovered portions of said metal ions from said at least one of said plurality of metallic cathodes;

using said fractured recovered portions of said metal ions as a source of metal to be deposited onto a substrate in a subsequent metal plating process; and

reintroducing said at least one of said plurality of metallic cathodes without said recovered portion of said metal ions to said electrochemical cell assembly.

14. (New) The method of claim 13, further comprising:

cutting said fractured pieces of the deposited metal into smaller pieces prior to utilizing said fractured pieces as said source of metal ions in said electrochemical deposition of the metal.

15. (New) The method of claim 12, further comprising:

cutting said fractured pieces of the deposited metal into smaller pieces prior to utilizing said fractured pieces as said source of metal ions in said electrochemical deposition of the metal.